

**ABSTRACT OF THE DISCLOSURE**

**OPTICAL DEVICE WITH IMMEDIATE GAIN FOR BRIGHTNESS  
ENHANCEMENT OF OPTICAL PULSES**

5 Amplifying optical waveguide devices, which, by combining an instantaneous or  
nearly instantaneous gain medium with pulsed cladding-pumping can convert the  
multimode pump pulses to higher-brightness (even single-mode) signal pulses. The  
operating parameters can be carefully matched to the interaction length of the  
10 amplifying optical device to promote efficient conversion. The invention combines  
attractive features of cladding-pumped waveguide devices such as robustness and  
good thermal management properties with those of synchronously pumped devices.  
Thus, the pulse energy of the generated beam is not limited by the energy that can be  
stored in the gain medium.

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